



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,816	03/18/2004	Masahiko Ogino	1021.43672X00	5867

20457 7590 10/01/2009  
ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-3873

EXAMINER
----------

DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
----------	--------------

1791

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

10/01/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

dlee@antonelli.com  
rrodriguez@antonelli.com  
lthenor@antonelli.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/802,816	<b>Applicant(s)</b> OGINO ET AL.	
	<b>Examiner</b> MATTHEW J. DANIELS	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-11, 25 and 26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-11, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 August 2009 has been entered.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 25 February 2009 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of the "Copy of the Notice of Rejection for corresponding Japanese Appl. No. 2003-078460" listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 7-11** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claims 7-11 contain subject matter which was not described

Art Unit: 1791

in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is noted that independent claim 5 has been significantly amended since it was first presented in the 18 March 2004 claims. Reconsideration of the specification reveals that there is no description in the specification which reasonably conveys to one skilled in the art that the inventors had possession of the invention of claim 5 *in combination with* the subject matter of instant claims 7-11. For example, in embodiments where the supporter is used, the mold and supporter are depicted as being flat. There is no indication that Applicants had possession of an embodiment in which the curved base member and mold with a curved surface (see claim 5) was used in combination with a light-transmitting mold (instant claim 7), a flexible mold (instant claim 8), or a mold secured to a supporter via an elastomer at its edge (instant claims 9-11).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 3-5, 7-10, and 25-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sreenivasan (US 2004/0009673) in view of Rowe (US 2201302). **As to Claim 5**, Sreenivasan teaches a nanoprint mold comprising a structure including a pattern member having a concave-convex pattern and a deep groove at approximately its center (Figs. 20A and 20B) which extends to and is open to the periphery portions for use with a press machine (Fig. 1)

Art Unit: 1791

which would implicitly allow for removal in the claimed manner (provides a release starting point). The Sreenivasan mold may be a laminate (Fig. 34) and is inherently suitable for performing the intended use of deforming a flat resin substrate.

Sreenivasan is silent to the base member having a curved surface.

However, Rowe teaches that in using a stamp, it is known to provide a laminate structure and a curved surface (19, 24, 13). The Rowe stamp is inherently suitable for pressing against a flat resin film.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the stamp of Rowe into that of Sreenivasan because one would recognize the Rowe techniques as applicable to the similar Sreenivasan method which would provide the expected result that the stamp would be capable of conforming to curved surfaces, thereby increasing the applicability of the stamp.

**As to Claims 3 and 4**, in the Rowe process, a portion of the center is larger in thickness than the periphery (Fig. 4). However, Rowe suggests that this configuration is chosen merely because the particular embodiment is performed on a spherically concave surface. However, in view of the teachings of Rowe, one would have found it obvious to adjust the stamp configuration to also print on convex surfaces. Once it is recognized that the stamp may be adjusted to print onto concave surfaces, one would have also found it obvious to provide the opposite configuration as recited in Claim 4. **As to Claim 7**, Sreenivasan teaches a transparent template ([0007], [0104]). **As to Claims 8-10**, Rowe teaches that it is known to provide a flexible mold secured to a support by a substance which is interpreted to be an elastomer (page 1, right col., line 40) in a circular configuration (Fig. 3). **As to Claim 25**, the deep groove of

Art Unit: 1791

Sreenivasan is configured in the same manner as the claimed mold. **As to Claim 26,**

Sreenivasan teaches concave or convex portions having a feature size of less than about 250 nm ([0118]).

5. **Claims 6 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sreenivasan (US 2004/0009673) in view of Rowe (US 2201302), and further in view of Chou (US 2002/0132482). Sreenivasan and Rowe teach the subject matter of Claim 5 above under 35 USC 103(a). **As to Claim 6**, it is unclear if Claim 6 is limiting on the invention of Claim 5 since peripheral components such as heating and pressing mechanisms do not further limit a mold. Sreenivasan provides a pressing mechanism (Fig. 1) and suggests heating ([0206]), but it is unclear whether Sreenivasan provides a heating mechanism. However, Chou teaches that several means can be used interchangeably to soften or cure the film such as UV and heating ([0027]). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Chou into that of Sreenivasan since Sreenivasan teaches UV curing and suggests a heat activated curing mechanism ([0206]), and Chou teaches that UV and heat can be used additionally or interchangeably with UV ([0027]). **As to Claim 11**, Sreenivasan is silent to the elastomeric edge to facilitate release. However, Chou teaches a peripheral elastomeric gasket which separates the mold from the material to be imprinted (Fig. 3, item 32, [0027]). Since the mold would compress into the material to be imprinted (the material on item 20), which would require compression of the gasket, removal of the mold from the resist would also be assisted by the gasket. It would have been prima facie obvious to one of ordinary

Art Unit: 1791

skill in the art at the time of the invention to incorporate the gasket of Chou into the stamp of Sreenivasan in order to allow for imprinting by external fluid pressure.

***Response to Arguments***

6. Applicant's arguments filed 5 August 2009 have been fully considered but they are not persuasive. The arguments are on the following grounds:

a) By virtue of the curved surface and the deep groove, the instant mold is easily released from the flat resin substrate or flat resin film after forming the fine structure. Sreenivasan teaches nanoimprint lithography processes, while Rowe teaches a mechanism for printing on a glass lamp bulb, but fails to teach nanoimprinting. The Rowe techniques are not at all similar to those of Sreenivasan. The Rowe pattern is much different in size of pattern.

b) Second, the nanoimprint technology of Sreenivasan and the instant application are different from printing because of problems of damage to the mold upon release. It is difficult to release a mold from the substrate without deforming the fine concave-convex pattern formed on the substrate. The Rowe techniques have no such problem of release. Rowe fails to teach providing a curved surface in order to release a nanoimprint mold from the substrate.

c) Thirdly, in Rowe, the object to be printed is not deformable and is not flat. The outer surface of the Rowe backing member is spherically convex because it is adapted for a holder for printing on spherically concave surfaces. One of ordinary skill in the art would not have recognized the Rowe techniques as applicable to the Sreenivasan method since Rowe is not similar to the Sreenivasan method.

d) Nothing in Chou remedies the deficiencies of the Sreenivasan and Rowe references.

7. These arguments are not persuasive or are moot for the following reasons:

a) While the Examiner acknowledges that the Rowe pattern would be of a different size, this argument overlooks the pertinent teaching found in the Rowe reference, and the motivation for the combination of references.

Sreenivasan teaches a nanoimprint lithography process, but the imprints are performed on flat articles. However, Rowe teaches a process wherein a process typically used on flat articles (stamping) is adapted to print features on curved articles instead. Significantly, this improvement is achieved merely by changing the curvature of the mold. After reconsidering the references and the claim, the Examiner remains of the view that changing the curvature of a known mold (that of Sreenivasan) such that it may conform to curved surfaces would have been obvious.

b) Applicants' arguments appear to be drawn to the intended use for the claimed mold, but are not persuasive. Rowe suggests that the ordinary artisan would have found it obvious to adjust the curvature of a template for the purpose of conforming to a curved article. The claims do not appear to recite any particular curvature distinguishable from that of Rowe. If a particular curvature is required to achieve the asserted mold release (such as curving the mold only at its edge, or some particular non-spherical curvature across the surface of the template), then Applicants may wish to introduce a limitation which recites any such particular curvature which achieves the desired mold release.

c) This argument is not persuasive since it is drawn to the intended use of the mold, which is not limiting on the claimed apparatus. There are no method claims pending, and



Art Unit: 1791

therefore this argument is given little patentable weight. The Examiner respectfully disagrees that the Rowe and Sreenivasan are "not similar." Both provide templates and result in a patterned material on a substrate. What Rowe additionally provides is the understanding in the art of how one may cause a template to conform to a substrate which is not flat. Viewed in this light, it is submitted that the references are not divergent in the manner suggested by Applicants.

d) The Chou rejection is maintained.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/  
Primary Examiner, Art Unit 1791  
9/28/09